APPENDIX C

SITE INSPECTION WORKSHEETS

This appendix consists of worksheets that can be used to generate an SI site score. Completion of these worksheets is not required, but the SI investigator must evaluate an SI score, either by these worksheets, PREscore, or other Regional scoring tools.

The worksheets consists of instructions and data tables to be filled in with scores from HRS reference tables. The data tables may also call for Data Type and References.

> **Data Type:** The Data Type columns should be filled in with an H, Q, or + if the data are HRS quality well documented. The Data Type column should be filled in with an E, X, or - if the data represents estimates, approximations, or are not fully documented. This type identifies data gaps for expanded SI to investigate
>
> **References:** The Reference columns should be filled in with coded reference numbers. The numbered reference list should be attached or the numbering should be cross-referenced to the SI Narrative.

The SI investigator will need the current Superfund Chemical Data Matrix (SCDM) OSWER Directive 9345.1-13 (revised semi-annually) to complete these worksheets.

SITE INSPECTION WORKSHEETS

CERCLIS IDENTIFICATION NUMBER
7553

SITE LOCATION			
SITE NAME	Andrew Knit		
ADDRESS	1000 Skyland Boulevard East		
CITY Tuscaloosa	**STATE** Alabama	**ZIP CODE** 35405	**TELEPHONE** Inactive site
COORDINATES: LATITUDE and LONGITUDE 33° 10' 14" N, 81° 37' 04" W		**TOWNSHIP, RANGE, and SECTION** Section 31 Township 21 South, Range 9 West	

OWNER/OPERATOR IDENTIFICATION					
OWNER Spiller Investments Inc.			**OPERATOR** Charlie Trotman		
ADDRESS P.O. Box 20824			**ADDRESS** 2525 Bell Road		
CITY Tuscaloosa			Montgomery		
STATE Alabama	**ZIP CODE** 35402-0824	**TELEPHONE**	**STATE** Alabama	**ZIP CODE** 36117	**TELEPHONE** 334-270-2727

SITE EVALUATION
AGENCY Alabama Department of Environmental Management (ADEM) 1400 Coliseum Blvd. Montgomery, AL 36110-2059
INVESTIGATOR Anne F. Cross, Pollution Control Specialist
CONTACT Humberto Guzman, EPA Region 4
TELEPHONE (404) 562-8942

GENERAL INFORMATION

Site Description and Operational History: Provide a brief description of the site and its operational history. State the site name, owner, operator, type of facility and operations, size of property, active or inactive status, and years of waste generation. Summarize waste treatment, storage, or disposal activities that have or may have occurred at the site; note whether there activities are documented or alleged. Identify all source types and prior spills, floods, or fires. Summarize highlights of the PA and other investigations.

Location:
Andrew Knit (AK; Spiller Market Centre) is located in Tuscaloosa, Tuscaloosa County Alabama south of the Black Warrior River. The United States Geological Survey's (USGS) 7.5 Minute Quadrangle Map entitled Tuscaloosa, Alabama shows the location of the site to be in the northeast ¼ of the southeast ¼ of the southwest ¼ of Section 31 Township 21 South, Range 9 West (Figure 1). The latitude and longitude have been estimated to be 33° 10' 14" North Latitude and 87° 31' 04" West Longitude (Ref. 2).

Site Description:
AK was a "cut and sew" factory for women's clothing. Aerial photographs for AK were located and viewed at the Tuscaloosa County Courthouse. After linking aerial photographs and topography maps together, an addition to the southeastern side of the building occurred between the years of 1981 and 1976. Areas for parking were designated on the south, west and north sides of the building. Today the old AK site can be found at 1416 Skyland Boulevard East, Tuscaloosa, Alabama 35405. Structured on the former AK site today are several businesses. These businesses and the old AK building are located near the top of a hill in an area with drastic changes in elevation (Ref. 7 and 10).

Businesses that are located in the Spiller Market Centre where AK once stood are Winn Dixie Marketplace, Phil's Buffalo, Northwest Financial, Blockbuster Video; Mailbox Express, Etc.; Salon Studios, Mattress Max and DMK Entertainment, Inc. The total space that these businesses combined occupy is 60,036 square feet. However, these businesses are in two different buildings. Winn Dixie opened its doors on December 1, 1994, while the other businesses opened sometime later in 1994, 1995 and 1997 (Ref. 5 and 13). To the left (west) and adjacent to the AK site is McFarland Mall. Nearby facilities include J & J Telephone Inc. and Harper Chambers in the rear (north), Alabama Power Substation, Security Storage and Memory Hill Gardens Cemetery are adjacent (east), restaurants, a Wal-Mart Supercenter and various other commercial businesses are located across Skyland Boulevard (south) (Figure 7).

Operational History and Waste Characteristics:
AK no longer exists as a factory at this site. AK operated approximately eighteen years. Before AK began operation at this site it was located where the old Gaylord's Department Store (GDS) once stood on Skyland Boulevard West. At the GDS site, the knitting operation was designated a pilot plant. The garments were sewn for practice and given to charities. During the latter part of 1966, the operation was moved to the current AK site which is being assessed on eastern Skyland Boulevard. At this location AK manufactured clothing for retail sale (Ref. 5 and Figure 7).

Tax records were reviewed at the Tuscaloosa County Courthouse in order to identify historical property ownership. Research revealed that the property being assessed had been owned by three different owners. During the time in which AK operated, the property owner was the Tuscaloosa Industrial Development Board (TIDB). According to the tax maps AK leased the property from the (TIDB) between the years of 1967 to 1985. From 1986 to 1989 Harper Chambers owned the property and used the old AK building for a hardware store. In 1990 Harper Chambers sold the property to Spiller Investments Inc. Spiller used the former AK building for a furniture store until it was demolished for the construction of the Spiller Market Centre. Spiller Investments currently owns the subject property (Ref. 5 and 7).

Jonathan Logan was the name brand of clothing manufactured at the facility and was the parent company of AK. Butte Knit and Act Three were factories and divisions of Jonathan Logan. These factories spun and wove the yarn for the material to be put on large rolls. The rolls of material were then shipped to other divisions like AK (Tuscaloosa, AL), Debra Knit (Northport, AL) and Lynn Knit (Brent, AL) for the clothes to be sewn (Ref. 5 and 9).

Operational History and Waste Characteristics Continued:
The procedures and operations that took place at AK were as follows:

Rolls of pre dyed material were shipped into AK. (material was mostly cotton and polyester)
The material was rolled out on large tables.
Patterns were placed over the material and pieces of material were cut.
About 50-75 patterns were cut at a time from the amount of material rolled onto the cutting tables.
Each piece of material was labeled with a number.
The pieces then went through inspection.
Pieces passing inspection were sent down the line to be sewn together. (sleeves, collars, cuffs etc.)
These pieces were then sent further down the assembly line, where all pieces of the garment were sewn together.
Next, the garments were under pressed. Under press machines are steam irons that press certain parts of the garment. (collar, cuffs, sleeves etc.)
After the under press, garments would be inspected.
Then the garments were either dry cleaned or spot treated to ensure cleanliness.
Garments were then bulk pressed. (entire article of clothing was pressed)
Again, garments were checked for flaws.
The garments were tagged, bagged and shipped to Butte Knit located in Spartenburg, S.C.
The Jonathan Logan name brand of clothing was then distributed to department stores.
(Ref. 5)

GENERAL INFORMATION (continued)

Site Sketch: Provided a sketch of the site. Indicate all pertinent features of the site and nearby environments including sources of wastes, areas of visible and buried wastes building, residences, access roads, parking areas, fences, fields, drainage patterns, water bodies, vegetation, wells, sensitive environments, and other features.

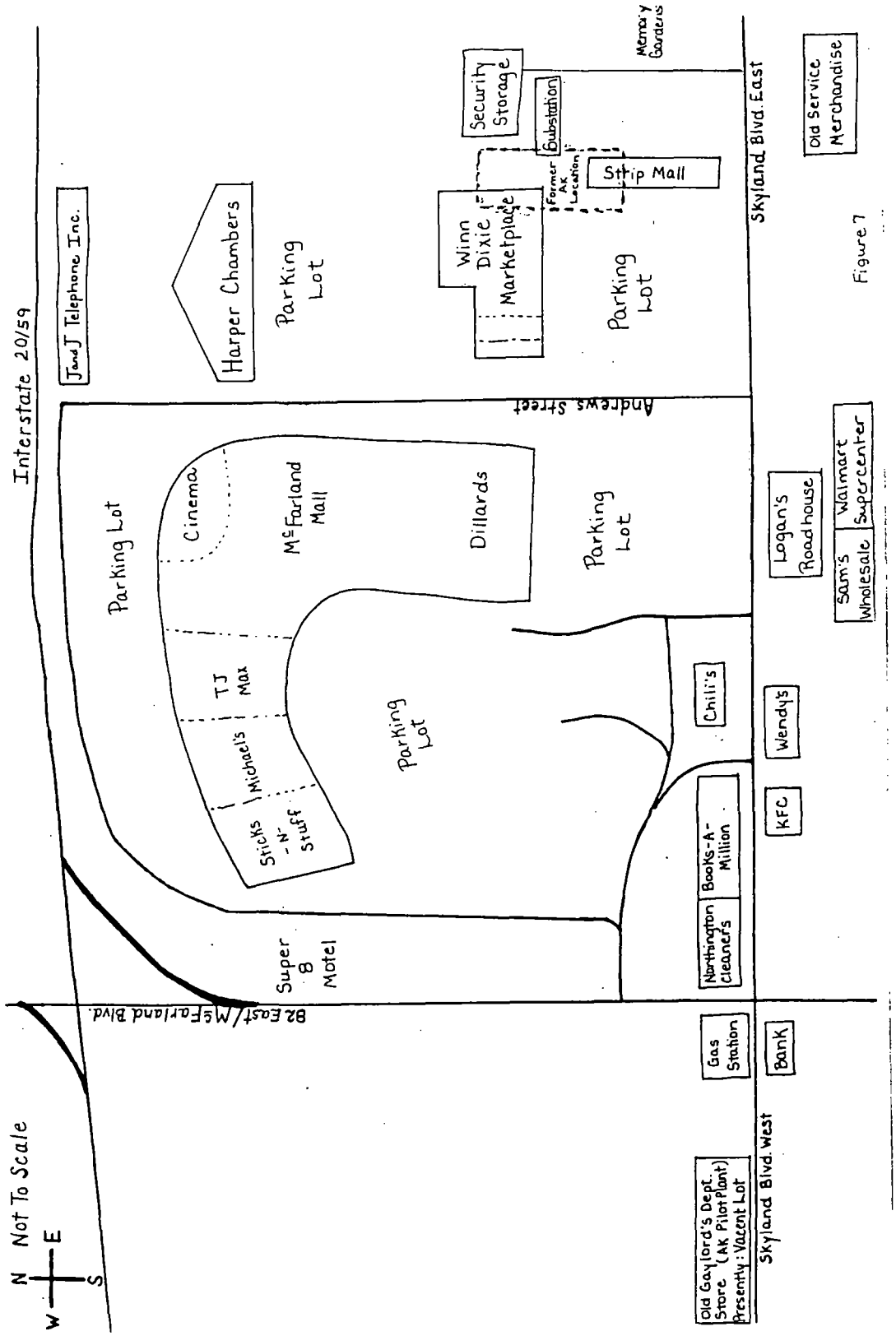

Figure 7

GENERAL INFORMATION (continued)

Source Description: Describe all sources at the site. Identify source type and relate to waste disposal operations. Provide source dimensions and the best available waste quantity information. Describe the condition of sources and all containment structures. Cite references.

SOURCE TYPES

Landfill: A man-made (by excavation or construction) or natural hole in the ground into which wastes have come to be disposed by backfilling, or by contemporaneous soil deposition with waste disposal.

Surface Impoundment: A natural topographic depression, man-made excavation, or diked area, primarily formed from earthen materials (lined or unlined) and designed to hold an accumulation of liquid wastes, wastes containing free liquids, or sludges not backfilled or otherwise covered; depression may be wet with exposed liquid or dry if deposited liquid has evaporated, volatilized or leached; structures that may be described as lagoon, pond, aeration pit, settling pond, tailings pond, sludge pit; also a surface impoundment that has been covered with soil after final deposition of waste materials.

Drum: A portable container designed to hold a standard 55-gallon volume of wastes.

Tank and Non-drum Container: Any device, other than a drum, designed to contain an accumulation of waste that provides structural support and is constructed primarily of fabricated materials (such as wood, concrete, steel, or plastic); any portable or mobile device in which waste is stored or otherwise handled.

Contaminated Soil: An area or volume of soil onto which hazardous substances have been spilled spread, disposed, or deposited.

Pile: Any non-containerized accumulation above the ground surface of solid, non-flowing waste; includes open dumps. Some types of waste piles are:

Chemical Waste Pile: A pile consisting primarily of discarded chemical products, by products, radioactive waste, or used or unused feedstocks

Scrap Metal or Junk Pile: A pile consisting primarily of scrap metal or discarded durable goods (such as appliances, automobiles, auto parts, batteries, etc.) composed of materials containing hazardous substances

Tailings Pile: A pile consisting primarily of any combination of overburden from a mining operation and tailings from a mineral mining, benefication, or processing operation.

Trash Pile: A pile consisting primarily of paper, garbage, or discarded non-durable goods containing hazardous substances.

Land Treatment: Land farming or other method of waste management in which liquid wastes or sludges are spread over land and tilled, or liquids are injected at shallow depths into soils.

Other: Sources not in categories listed above.

GENERAL INFORMATION (continued)

Source Description: Include description of containment per pathway for ground water (see HRS Table 3-2), surface water (see HRS table 4-2), and air (see HRS table 6-3 and 6-9).

The hazardous waste source is contaminated soil. The contaminated soil is not contained, therefore, the contaminated soil can potentially impact other pathways associated with the Andrew Knit (AK) site.

Hazardous Waste Quantity (HWQ) Calculation: SI Tables 1 and 2 (see HRS tables 2-5, 2-6, and 5-2)

Tier D: (Area), Contaminated Soil, ≤ 78 Acres
HWQ= 10

Attach additional pages, if necessary **HWQ =** 10

SI TABLE 1: HAZARDOUS WASTE QUANTITY (HWQ) SCORES FOR SINGLE SOURCE SITES AND FORMULAS FOR MULTIPLE SOURCE SITES

		Single Source Sites	
(Column 1) Tier	(Column 2) Source Type	(Column 3) HWQ = 10	(Column 4) HWQ = 100
A Hazardous Constituent Quantity	N/A	HWQ = 1 If Hazardous Constituent Quantity data are complete HWQ = 10 If Hazardous Constituent Quantity data are not complete	> 100 to 10,000 lbs
B Hazardous Wastestream Quantity	N/A	≤ 500,000 lbs	>500,000 to 50 million lbs
C Volume	Landfill	≤ 6.75 million cubic feet ≤ 250,000 cubic yards	> 6.75mil to 675mil cu.ft > 250,000 to 25mil cu.yd
	Surface Impoundment	≤ 6,750 cubic feet ≤ 250 cubic yards	> 6750 to 675000 cu.ft. > 250 to 25,000 cu.yd.
	Drums	≤ 1,000 drums	> 1000 to 100000 drums
	Tanks and non-drum Containers	≤ 50,000 gallons	> 50,000 to 5mil gallons
	Contaminated soil	≤ 6.75 mil cubic feet ≤ 250,000 cubic yards	> 6.75mil to 675mil cu.ft >250000 to 25mil cu.yd
	Pile	≤ 6,750 cubic feet ≤ 250 cubic yards	> 6750 to 675000 cu.ft > 250 to 25000 cu. yd
	Other	≤ 6,750 cubic feet ≤ 250 cubic yards	> 6750 to 675000 cu. ft >250 to 25000 cu. yd
D Area	Landfill	≤ 340,000 sq. ft ≤ 7.8 acres	>340000 to 34mil sq.ft. > 7.8 to 780 acres
	Surface Impoundment	≤ 1,300 sq. ft ≤ 0.029 acres	>1300 to 130000 sq.ft. >0.029 to 2.9 acres
	Contaminated soil	≤ 3.4mil sq. ft ≤ 78 acres	>3.4mil to 340mil sq.ft. >78 to 7800 acres
	Pile	≤ 1,300 sq. ft ≤ 0.029 acres	>1300 to 130000 sq.ft. >0.029 to 2.9 acres
	Land treatment	≤ 27,000 sq. ft ≤ 0.62 acres	>27000 to 2.7mil sq.ft. >0.62 to 62 acres

Table 1 (continued)

Single source sites		Multiple source sites		
HWQ = 10000	HWQ=1000000	Divisor	Source type	Tier
>10000 - 1mil lbs	>1mil lbs	lbs/1	N/A	A Hazardous Constituent Quantity
>50mil - 5bil lbs	>5bil lbs	lbs/5000	N/A	B Hazardous Wastestream Quantity
>675mil - 67.5bil	>67.5bil	cu.ft./675000	Landfill	C Volume
>25mil - 2.5bil	>2.5bil	cu.yd/2500		
>675000-67.5mil	>67.5mil	cu.ft/67.5	Surface Impoundment	
>25000 - 2.5mil	>2.5mil	cu.yd/2.5		
>100000 - 10mil	>10mil	drums/10	Drums	
>5mil-500mil	>500mil	gallons/500	Tanks and non-drum containers	
>675mil-67.5bil	>67.5bil	cu.ft/67500		
>25mil-2.5bil	>2.5bil	cu.yd/2500	Contaminated soil	
>675000-67.5mil	>67.5mil	cu.ft/67.5	Pile	
>25000-2.5mil	>2.5mil	cu.yd/2.5		
>675000-67.5mil	>67.5mil	cu.ft/67.5	Other	
>25000-2.5mil	>2.5mil	cu.yd/2.5		
>34mil-3.4bil	>3.4bil	sq.ft/3400	Landfill	D Area
>780-78000	>78000	acres/0.078		
>130000-13mil	>13mil	sq.ft/13	Surface Impoundment	
>2.9-290	>290	acres/0.00029		
>340mil-34bil	>34bil	sq.ft/34000	Contaminated soil	
>7800-780000	>780000	acres/0.78		
>130000-13mil	>13mil	sq.ft/13	Pile	
>2.9-290	>290	acres/0.00029		
>2.7mil-270mil	>270mil	sq.ft/270	Land treatment	
>62-6200	>6200	acres/0.0062		

HAZARDOUS WASTE QUANTITY (HWQ) CALCULATION

For each migration pathway, evaluate HWQ associated with sources that are available to migrate to that pathway. (Note: If **Actual Contamination Targets** exist for groundwater, surface water, or air migration pathways, assign the calculated HWQ score or 100, whichever is greater, as the HWQ score for that pathway.) For each source, evaluate HWQ for one or more of the four tiers (SI Table 1; HRS Table 2-5) for which data exist: constituent quantity, wastestream quantity, source volume, and source area. Select the tier that gives the highest value as the source HWQ. Select the source volume HWQ rather than source area HWQ if data for both tiers are available.

Column 1 of SI Table 1 indicates the quantity tier. Column 2 lists source types for the four tiers. Columns 3,4,5, and 6 provide ranges of waste amount for sites with only one source, corresponding to HWQ scores at the tops of the columns. Columns 7 provides formulas to obtain source waste quantity values at sites with multiple sources.

1. Identify each source type
2. Examine all waste quantity data available for each source. Record constituent quantity and wastestream mass or volume. Record dimensions of each source.
3. Convert source measurements to appropriate units for each tier to be evaluated.
4. For each source, use the formulas in the last column of SI Table 1 to determine the waste quantity value for each tier that can be evaluated. Use the waste quantity value obtained from the highest tier as the quantity value for the source
5. Sum the values assigned to each source to determine the total site waste quantity.
6. Assign HWQ score from SI Table 2 (HRS Table 2-6)

Note these exceptions to evaluate soil exposure pathway HWQ (see HRS Table 5-2)

The divisor for the area (sq.ft) of a landfill is 34,000.
The divisor for the area (sq.ft) of a pile is 34.
Wet surface impoundments and tanks and non-drum containers are only sources for which volume measurements are evaluated for the soil exposure pathway.

SI Table 2: HWQ Score for sites

Site WQ Total	HWQ Score
0	0
1* to 100	1**
> 100 to 10,000	100
>10,000 to 1 million	10,000
> 1 million	1,000,000

* If the WQ total is between 0 and 1 round it to 1
** If the hazardous constituent quantity data are not complete, assign the score of 0

SI TABLE 3: WASTE CHARACTERIZATION WORKSHEET

Site Name: Andrew Knit **References:** SCDM Hard Copy June, 1996
BHATE Groundwater Report Dated September 7, 2001

Sources:
1. Soil Contamination
2. Groundwater Contamination

			GW Path	SW Path							
Source	Haz. Sub	Toxicity	GW Mob	Tox Mob	Per	Tox/ Per	Bioac Pot	Tox/ Per/ Bioac	Ecotox	Ecotox/per	Ecotox/ Per/ Bioac
1,2	tetrachoroethane	100	1	100	.4	40	50	2,000	100	40	2,000
1,2	trichloroethene	10	1	100	.4	4	50	200	100	40	2,000
1,2	cis 1,2 dichloroethene	100	1	100	.4	40	5	200			
2	chloroform	100	1	100	.4	40	5	200	10	4	20
2	bromodichlorom ethane	100	1	100	.4	40	50	2,000			
1	1,1-dichloroethane	100	1	100	.4	40	50	2,000	10	4	200
1	trans-1,2-dichloroethane	100	1	100	.4	40	50	2,000	1	.4	20
1	naphthalene	100	1	100	.4	40	500	20,000	1,000	400	200,000
1	1,2,4 trimethylbenzene										
1	1,3 5 trimethylbenzene										
1	n,p-xylenes	10	1	10	.4	4	50	200	100	40	2,000
1	o-xylene	1	1	1	.4	.4	50	20	100	40	2,000
2	acetone	10	1	10	.4	4	.5	2	100	40	20

Groundwater Observed Release Substances Summary Table

On SI Table 4, list the hazardous substances associated with the site detected in groundwater samples for that aquifer. Include only those substances directly observed or with concentrations significantly greater than background levels. Obtain toxicity values from the SCDM. Assign mobility a value of 1 for all observed release substances regardless of the aquifer being evaluated. For each substance, multiply the toxicity by the mobility to obtain the toxicity/mobility factor value; enter the highest toxicity/mobility value for the aquifer in the space provided.

Groundwater Actual Contamination Targets Summary Table

If there is an observed release at a drinking water well, enter each hazardous substance meeting the requirements for an observed release by well and sample ID on SI table 5 and record the detected concentration. Obtain benchmark, cancer risk, and reference dose concentrations from SCDM. For MCL and MCLG benchmarks, determine the highest percentage of benchmark obtained for any substance. For cancer risk and reference dose, sum the percentages for the substances listed. If benchmark, cancer risk, or reference dose concentrations are not available for a particular substance, enter N/A for the percentage. If the highest benchmark percentage or the percentage sum calculated for cancer risk or reference dose equals or exceeds 100%, evaluate the population using the well as a level I target. If these percentages are less than 100% or all are N/A, evaluate the population using the well as a level II target for that aquifer.

SI TABLE 4: GROUNDWATER OBSERVED RELEASE SUBSTANCES (BY AQUIFER)

Sample ID	Hazardous Substance	Bckgrd. Conc.	Toxicity/ Mobility	References

SI TABLE 5: GROUNDWATER ACTUAL CONTAMINATION TARGETS

Well ID: Level I: Level II: Pop. Ser.: Ref.:

Sample ID	Haz.Sub.	Conc. PPB	Bench. conc. MCL/MCLG	% of Bench	Cancer risk conc.	% of cancer risk conc.	RFD	% of RFD
			Highest %		Sum of %		Sum of %	

Well ID: Level I: Level II: Pop. Ser. Ref.

Sample ID	Haz.Sub.	Conc. PPB	Bench. conc. MCL/MCLG	% of Bench.	Cancer risk conc.	% of cancer risk conc.	RFD	% of RFD
			Highest %		Sum of %		Sum of %	

GROUNDWATER PATHWAY
GROUNDWATER USE DESCRIPTION

Describe Ground Water Use within 4 Miles of the Site:
Describe generalized stratigraphy, aquifer, municipal and private wells (Ref. 2)

The groundwater aquifers of Tuscaloosa County include the Eutaw aquifer, the Gordo aquifer, the Coker aquifer, the Pottsville aquifer, and the Watercourse aquifer (Moore, 1992). The source of recharge for these aquifers is rainfall. The majority of the rainfall runs off during and directly after a rain event or is returned to the atmosphere by evaporation and transpiration. A small amount infiltrates to serve as aquifer recharge (DeJarnette and Crownover, 1987).

The site is located in the recharge area of the Watercourse aquifer (Moore, 1992). The Watercourse aquifer is not a major aquifer in Tuscaloosa County, but significant quantities of water can be acquired in wells located in the flood plains of major streams. In the vicinity of the site the Watercourse aquifer overlies and recharges the Coker aquifer. The Coker aquifer is composed of very fine to course grained sand, sandy clay, and gravel, and ranges in thickness from 0 to 1,000 feet. The Coker aquifer is a major aquifer in Tuscaloosa County and will yield 1 to 2 million gallons per day to an individual well (DeJarnette and Crownover, 1987).

No active public water supply wells or springs are located within four miles of the site (ADEM GPS Data). Due to the urban nature of the area near the site domestic wells are not expected in the vicinity of the site.

Show Calculations of Ground Water Drinking Water Populations for each Aquifer:
Provide apportionment calculations for blended supply systems.
Tuscaloosa, Alabama the average household size is 2.22 persons (Ref..11))
No drinking water wells in the four mile distant rings; therefore, no blended supply systems in the four mile radius.

GROUNDWATER PATHWAY WORKSHEET

Likelihood of release	Score	Data Type	Refs
1. OBSERVED RELEASE: If sampling data or direct observation support a release to the aquifer, assign a score of 550. Record observed release substances on SI Table 4.			
2. POTENTIAL TO RELEASE: Depth to aquifer: 78 feet. If sampling data do not support a release to the aquifer, and the site is in karst terrain or the depth to aquifer is 70 feet or less, assign a score of 500; otherwise, assign a score of 340. Optionally, evaluate potential to release according to HRS Section 3.			
LR =	340		

Targets

Are any wells part of a blended system? **Yes____ No X** If yes, attach a page to show apportionment calculations.			Ref.2
3. ACTUAL CONTAMINATION TARGETS: If analytical evidence indicates that any target drinking water well for the aquifer has been exposed to a hazardous substance from the site, evaluate the factor score for the number of people served (SI Table 5). Level I: _____ people x 10 = _____ Level II: _____ people x 1 = _____ **Total =**	0		
4. POTENTIAL CONTAMINATION TARGETS: Determine the number of people served by drinking water wells for the aquifer or overlying aquifers that are not exposed to a hazardous substance from the site; record the population for each distance category in SI Table 6a or 6b. Sum the population values and multiply by 0.1.	0		Ref.2
5. NEAREST WELL: Assign a score of 50 for any Level I Actual Contamination Targets for the aquifer or overlying aquifer. Assign a score of 45 if there are Level II targets but no Level I targets. If no Actual Contamination Targets exist, assign the Nearest Well score from SI Table 6a or 6b. If no drinking water wells exist within 4 miles assign 0.	0		
6. WELLHEAD PROTECTION AREA (WHPA): If any source lies within or above a WHPA for the aquifer, or if a groundwater observed release has occurred within a WHPA, assign a score of 20; assign 5 if neither condition applies but a WHPA is within 4 miles; otherwise assign 0.	0		Ref.2
7.RESOURCES: Assign a score of 5 if one or more groundwater resource applies; assign 0 if none applies. - Irrigation (5 acre min) of commercial food crops or commercial forage crops -Watering of commercial livestock -Ingredient in commercial food preparation -Supply for commercial aquaculture -Supply for a major or designated water recreation area, excluding drinking water use	5		
Sum of Targets T =	5		

SI TABLE 6 (From HRS Table 3-12): Values for Pot. Contamination GW Target Pop.

SI Table 6a: Other Than Karst Aquifers

Population served by wells within distance category

Dis. from site	Pop.	near well	1 to 10	11 to 30	31 to 100	101 to 300	301 to 1000	1001 to 3000	3001 to 1.0E+4	10001 to 3.0E+4	30001 to 1.0E+5	>1.0E+5 to 3.0E+5	Pop. val.
0 to .25		20	4	17	53	164	522	1633	5214	16325	52137	163246	
.25 to .5		18	2	11	33	102	324	1013	3233	10122	32325	101213	
.5 to 1		9	1	5	17	52	167	523	1669	5224	16684	52239	
1 to 2		5	0.7	3	10	30	94	294	939	2939	9385	29384	
2 to 3		3	0.5	2	7	21	68	212	678	2122	6778	21222	
3 to 4		2	0.3	1	4	13	42	131	417	1306	4171	13060	
Nearest well												Sum =	

SI TABLE 6 (From HRS Table 3-12) Values for Pot. Contamination GW Target Pop.

SI Table 6b: Karst Aquifers

Population served by wells within distance category

Dis. from site	Pop.	near well	1 to 10	11 to 30	31 to 100	101 to 300	301 to 1000	1001 to 3000	3001 to 1.0E+4	10001 to 3.0E+4	30001 to 1.0E+5	>1.0E+5 to 3.0E+5	Pop. Val.
0 to .25		20	4	17	53	164	522	1633	5214	16325	52137	163246	
.25 to .5		20	2	11	33	102	324	1013	3233	10122	32325	101213	
.5 to 1		20	2	9	26	82	261	817	2607	8163	26068	81623	
1 to 2		20	2	9	26	82	261	817	2607	8163	26068	81623	
2 to 3		20	2	9	26	82	261	817	2607	8163	26068	81623	
3 to 4		20	2	9	26	82	261	817	2607	8163	26068	81623	
Nearest Well =												Sum =	

GROUNDWATER PATHWAY WORKSHEET (concluded)

Waste Characteristics	Score	Data Type
8. If any Actual Contamination Targets exist for the aquifer or overlying aquifers, assign the calculated hazardous waste quantity score or a score of 100, whichever is greater; if no Actual Contamination Targets exist, assign the hazardous waste quantity score calculated for sources available to migrate to groundwater.	10	
9. Assign the highest groundwater toxicity/mobility value from SI Table 3 or 4.	100	
10. Multiply the groundwater toxicity/mobility and hazardous waste quantity scores. Assign the Waste Characteristics score from the table below: (from HRS Table 2-7)		

Product	WC Score
0	0
>0 to <10	1
10 to <100	2
100 to <1000	3
1000 to <10000	6
10000 to <1E+05	10
1E+05 to <1E+06	18
1E+06 to <1E+07	32
1E+07 to <1E+08	56
1E+08 or greater	100

WC= 6

Multiply LR by T and by WC. Divide the product by 82,500 to obtain the groundwater pathway score for each aquifer. Select the highest aquifer score. If the pathway score is greater than 100, assign 100.

Groundwater Pathway Score: $\frac{340 \times 5 \times 6}{82{,}500} =$ .1236 (Maximum of 100)

SURFACE WATER PATHWAY

Sketch of the Surface Water Migration Route:
Label all surface water bodies. Include runoff and drainage direction, probable point of entry, and 15-mile target distance limit. Mark sample locations, intakes, fisheries, and sensitive environments. Indicate flow directions, tidal influence, and rate.

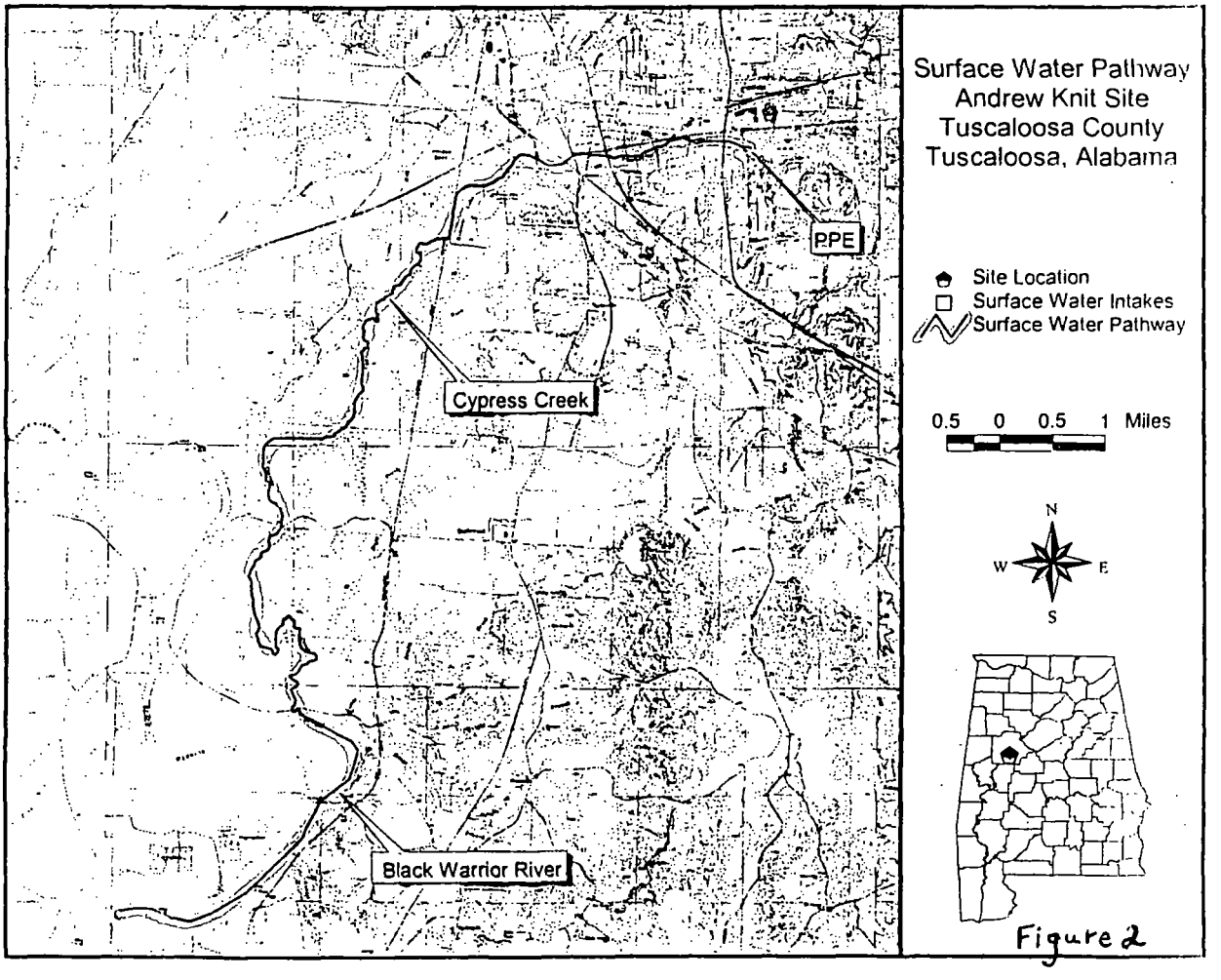

Figure 2

SURFACE WATER PATHWAY

Surface Water Observed Release Substance Summary Table

On SI Table 7, list hazardous substances detected in surface water samples for the watershed, which can be attributed to the site. Include only those substances in observed releases (direct observation) or with concentration levels significantly above background levels. Obtain toxicity, persistence, bioaccumulation potential, and ecotoxicity values from SCDM. Enter the highest toxicity/persistence, toxicity/persistence/bioaccumulation, and ecotoxicity/persistence/ecobioaccumulation values in the spaces provided.

- TP = Toxicity x persistence
- TPB = TP x bioaccumulation
- ETPB = EP x bioaccumulation (EP = ecotoxicity x persistence)

Drinking Water Actual Contamination Targets Summary Table

For an observed release at or beyond a drinking water intake, on SI Table 8 enter each hazardous substance by sample ID and the detected concentration. For surface water sediment detecting a hazardous substance at or beyond intake, evaluate the intake as level II contamination. Obtain benchmark, cancer risk, and reference dose concentrations for each substance from SCDM. For MCL and MCGL benchmark, determine the highest percentage of benchmark obtained for any substance. For cancer risk and reference dose, sum the percentages of the substances listed. If benchmark, cancer risk, or reference dose concentrations are not available for a particular substance, enter N/A for the percentage. If the highest benchmark percentage or the percentage sum calculated for cancer risk or reference dose equals or exceeds 100%, evaluate the population served by the intake as a Level I target. If the percentages are less than 100% or all are N/A, evaluate the population served by the intake as a Level II target.

SI TABLE 7: SURFACE WATER OBSERVED RELEASE SUBSTANCES

Sample ID	Haz. Substance	Bckgrd. Conc.	Toxicity/Per.	Tox/Per /Bio	Ecotox/Per /Ecobio	Ref.
		Highest Tox/Mob				

SI TABLE 8: SURFACE WATER DRINKING WATER ACTUAL CONTAMINATION TARGETS

Intake ID: Sample type: Level I: Level II: Pop. ser.: Ref.:

Sample ID	Haz.Sub.	Conc. PPB	Bench. conc. MCL/MCLG	% of Bench	Cancer risk conc.	% of cancer risk conc.	RFD	% of RFD
			Highest %		Sum of %		Sum of %	

Intake ID: Sample type: Level I: Level II: Pop. ser.: Ref.:

Sample ID	Haz.Sub.	Conc. PPB	Bench. conc. MCL/MCLG	% of Bench.	Cancer risk conc.	% of cancer risk conc.	RFD	% of RFD
			Highest %		Sum of %		Sum of %	

SURFACE WATER PATHWAY

LIKELIHOOD OF RELEASE- OVERLAND/FLOOD MIGRATION	Score	Data Type	Ref
1. OBSERVED RELEASE: If sampling data or direct observation support a release to surface water in the watershed, assign a score of 550. Record observed release substances on SI Table 7.			
2. POTENTIAL TO RELEASE: Distance to surface water: 1,468 feet. If sampling data do not support a release to surface water in the watershed, use the table below to assign a score. **Score** Distance to surface water <2500 feet 500 Distance to surface water >2500 feet and Site in annual or 10 yr floodplain 500 Site in 100 yr floodplain 400 Site in 500 yr floodplain 300 Site outside 500 yr floodplain 100 Optionally, evaluate surface water potential to release according to HRS Section 4.1.2.1.2			Ref. 10
LR =	500		

LIKELIHOOD OF RELEASE GROUNDWATER TO SURFACE WATER MIGRATION	Score	Data Type	Ref
1. OBSERVED RELEASE: If sampling data or direct observation support a release to surface water in the watershed, assign a score of 550. Record observed release substances on SI Table 7. Note: Evaluate groundwater to surface water migration only for a surface water body that meets all of the following conditions: 1. A portion of the surface water is within 1 mile of site sources having a containment factor greater than 0. 2. No aquifer discontinuity is established between the source and the above portion of the surface water body. 3. The top of the uppermost aquifer is at or above the bottom of the surface water. *Elevation of top of uppermost aquifer:* Elevation of bottom of surface water body:			
2. POTENTIAL TO RELEASE: Use the groundwater potential to release. Optionally, evaluate surface water potential to release according to HRS Section 3.1.2			
LR =			

SURFACE WATER PATHWAY
LIKELIHOOD OF RELEASE AND DRINKING WATER THREAT WORKSHEET
(CONTINUED)

DRINKING WATER THREAT TARGETS

Record the water body type, flow, and number of people served by each drinking water intake within the target distance limit in the watershed. If there is no drinking water intake within the target distance limit, assign 0 to factors 3, 4, and 5. Intake Name Water Body Type Flow Pop. Served NO INTAKES No intakes exist along the Surface Water Pathway Are any intakes part of a blended system? No If yes, attach a page to show apportionment calculations. 3. ACTUAL CONTAMINATION TARGETS: If analytical evidence indicates a drinking water intake has been exposed to a hazardous substance from the site, list the intake name and evaluate the factor score for the drinking water population (SI Table 8) Level I: people x 10 = Level II: people x 1 = Total =	0		Ref. 2
4. POTENTIAL CONTAMINATION TARGETS: Determine the number of people served by drinking water intakes for the watershed that have not been exposed to a hazardous substance from the site. Assign the population values from SI Table 9. Sum the values and multiply by 0.1.	0		
5. NEAREST INTAKE: Assign a score of 50 for any Level I Actual Contamination Drinking Water Targets for the watershed. Assign a score of 45 if there are Level II targets for the watershed, but no Level I targets. If no Actual Contamination Drinking Water Targets exist, assign a score for the intake nearest the PPE from SI Table 9. If no drinking water intakes exist, assign 0.	0		
6. RESOURCES: Assign a score of 5 if one or more surface water resource applies; assign 0 if none applies. -Irrigation (5 acre minimum) of commercial food crops or commercial forage crops -Watering of commercial livestock -Ingredient in commercial food preparation -Major or designated water recreation area, excluding drinking water use	5		
SUM OF TARGETS T =	5		

SI TABLE 9 (From HRS 4-14): DILUTION-WEIGHTED POPULATION VALUES FOR POTENTIAL CONTAMINATION FOR SURFACE WATER MIGRATION PATHWAY

Type of Surface Water Body	Pop.	Nearest Intake	Number of people: 1 to 10	11 to 30	31 to 100	101 to 300	301 to 1,000	1,001 to 3,000	3,001 to 10,000	10,001 to 30,000	Pop. Value
Minimal Stream (<10 cfs)	0	20	4	17	53	164	522	1,633	5,214	16,325	0
Small to moderate stream (10 to 100 cfs)		2	.4	2	5	16	52	163	521	1,633	
Moderate to large stream (>100 to1000 cfs)		0	.04	.2	.5	2	5	16	52	163	
Large Stream to river (>1,000 to 10,000 cfs)		0	.004	.02	.05	.2	.5	2	5	16	
Large River (>10,000 to 100,000 cfs)		0	0	.002	.005	.02	.05	.2	.5	16	
Very Large River (>100000 cfs)		0	0	0	.001	.002	.005	.02	.05	.2	
Shallow ocean zone or Great Lake (depth < 20 feet)		0	0	.002	.005	.02	.05	.2	.5	2	
Moderate ocean zone or Great Lake (depth 20 to 200 feet)		0	0	0	.001	.002	.005	.02	.05	.2	
Deep ocean zone or Great Lake (depth > 200 feet)		0	0	0	0	.001	.003	.008	.03	.08	
3 mile mixing zone in quiet flowing river (≥ 10 cfs)		10	2	9	26	82	261	817	2,607	8,163	
Nearest Intake =		0								**Sum =**	0

References _____

SURFACE WATER PATHWAY

Human Food Chain Actual Contamination Targets Summary Table

On SI Table 10, list the hazardous substance detected in sediment, aqueous, sessile benthic organism tissue, or fish tissue samples (taken from fish caught with the boundaries of the observed release) by sample ID and concentration. Evaluate fisheries within the boundaries of observed release detected by sediment or aqueous samples as Level II, if at least one observed release substance has a bioaccumulation potential factor value of 500 or greater (see SI Table 7). Obtain benchmark, cancer risk, and reference dose concentrations from SCDM. For FDAAL benchmarks, determine the highest percentage of benchmark obtained for any substance. For cancer risk and reference dose, sum the percentages for the substances listed. If benchmark, cancer risk, or reference dose concentrations are not available for a particular substance, enter N/A for the percentage. If the highest benchmark percentage sum calculated for cancer risk or reference dose equals or exceeds 100%, evaluate this portion of the fishery as subject to Level I concentrations. If the percentages are less than 100% or all are N/A, evaluate the fishery as a Level II target.

Sensitive Environment Actual Contamination Targets Summary Table

On SI Table 11, list each hazardous substances detected in aqueous or sediment samples at or beyond wetlands or a surface water sensitive environment by sample ID. Record the concentration. If contaminated sediments or tissues are detected at or beyond a sensitive environment, evaluate the sensitive environment as Level II. Obtain benchmark concentrations from SCDM. For AWQC/AALAC benchmarks, determine the highest percentage of benchmark of the substances detected in aqueous samples. If benchmark concentrations are not available for a particular substance, enter N/A for the percentage. If highest benchmark percentage equals or exceeds 100%, evaluate that part of the sensitive environment subject to Level I concentrations. If the percentage is less than 100%, or all are N/A, evaluate the sensitive environment as Level II.

SI TABLE 10: HUMAN FOOD CHAIN ACTUAL CONTAMINATION TARGETS FOR WATERSHED

SI TABLE 11: SENSITIVE ENVIRONMENT ACTUAL CONTAMINATION TARGETS FOR WATERSHED

Envir. ID: Sample Type: Level I: Level II: Envir. Val:

Sample ID	Hazardous Substance	Conc. PPB	Bench. Conc. AWQC or AALAC	% of Bench.	Ref.
			Highest %		

Envir. ID: Sample Type: Level I: Level II: Envir. Val:

Sample ID	Hazardous Substance	Conc. PPB	Bench. Conc. AWQC or AALAC	% of Bench.	Ref.
			Highest %		

SURFACE WATER PATHWAY (continued)
HUMAN FOOD CHAIN THREAT WORKSHEET

Human Food Chain Threat Targets

Record the water body type and flow for each fishery within the target distance limit. If there is no fishery within the target distance limit, assign a score of 0 at the bottom of this page.			Ref.2
Fishery Name: Cypress Creek Water Body: Minimal Stream Flow: <10cfs Species: Production: lbs/yr Species: Production: lbs/yr Fishery Name: Black Warrior River Water Body: Mod./Lg. Stream: 298 cfs Species: Production: lbs/yr Species: Production: lbs/yr			
FOOD CHAIN INDIVIDUAL 7. ACTUAL CONTAMINATION FISHERIES If analytical evidence indicates that a fishery has been exposed to a hazardous substance with a bioaccumulation factor greater than or equal to 500 (SI Table 10), assign a score of 50 if there is a Level I fishery. Assign 45 if there is a Level II fishery, but no Level I fishery. 8. If there is a release of a substance with a bioaccumulation factor greater than or equal to 500 to a watershed containing fisheries within the target distance limit, but there are no Level I or Level II fisheries, assign a score of 20. If there is no observed release to the watershed, assign a value for potential contamination fisheries from the table below using the lowest flow at all fisheries within the target distance limit:			
Lowest Flow — FCI Value <10 cfs — 20 10 to 100 cfs — 2 >100 cfs, coastal tidal waters, oceans, or Great Lakes — 0 3- mile mixing zone in quiet flowing river — 10 FCI Value =			
SUM OF TARGETS =	20		

SURFACE WATER PATHWAY (continued)
ENVIRONMENTAL THREAT WORKSHEET

Environmental Threat Targets

Record the water body type and flow for each surface water sensitive environment within the target distance (see SI Table 12). If there is no sensitive environment within the target distance limit, assign a score of 0 at the bottom of the page.

Environment Name	Water Body Type	Flow (cfs)
Cypress Creek	Minimal Stream	< 10
Black Warrior River	Mod./Lg Stream	298

Ref.2

9. ACTUAL CONTAMINATION SENSITIVE ENVIRONMENTS:
If sampling data or direct observation indicate any sensitive environment has been exposed to a hazardous substance from the site, record this information on SI Table, and assign a factor value for the environment (SI Table 13 and 14).

Environment Name	Type and value	Multiplier	Product

Sum = 0

10. POTENTIAL CONTAMINATION SENSITIVE ENVIRONMENTS

Flow	Dilution (SI table 12)	Type and Value	Pot Cont.	Product
< 10 cfs	1	x (E/T sp.) x 75 x 0.1	=	7.5
< 10 cfs	1	x (Clean Water Act) 5 x 0.1	=	0.5
< 10 cfs	1	x (Wetlands) x 150 x 0.1	=	15

Sum =

SUM OF TARGETS = 23

SI TABLE 12 (HRS Table 4-13):
SURFACE WATER DILUTION WEIGHTS

Type of Surface Water Body		Assigned Dilution Weight
Descriptor	Flow Characteristics	
Minimal stream	<10 cfs	1
Small to moderate stream	10 to 100 cfs	0.1
Moderate to large stream	>100 to 1,000 cfs	0.01
Large stream to river	>1,000 to 10,000 cfs	0.001
Large River	>10,000 to 100,000 cfs	0.0001
Very large river	> 100,000 cfs	0.00001
Coastal tidal waters	Flow not applicable; depth not applicable	0.001
Shallow ocean zone or Great Lake	Flow not applicable; depth less than 20 feet	0.001
Moderate depth ocean zone or Great Lake	Flow not applicable; depth 20 to 200 feet	0.0001
Deep ocean zone or Great Lake	Flow not applicable; depth greater than 200 feet	0.000005
3-mile mixing zone in quiet flowing river	10 cfs or greater	0.5

SI TABLE 13 (HRS TABLE 4-23)
SURFACE WATER AND AIR SENSITIVE ENVIRONMENTS VALUES

SENSITIVE ENVIRONMENT	ASSIGNED VALUE
Critical habitat for Federal designated endangered or threatened species Marine Sanctuary National Park Designated Federal Wilderness Area Ecologically import areas identified under the Coastal Zone Wilderness Act Sensitive Areas identified under the National Estuary Program or Near Coastal Water Program of the Clean Water Act Critical Areas identified under the Clean Lakes Program of the Clean Water Act (subareas inlakes or entire small lakes) National Monument (air pathway only) National Seashore Recreation Area National Lakeshore Recreation Area	100
Habitat known to be used by Federal designated or proposed endangered or threatened species National Preserve National or State Wildlife Refuge Unit of Coastal Barrier Resources System Coastal Barrier (undeveloped) Federal land designated for the maintenance of fish/shellfish species within a river system, bay, or estuary Migratory pathways and feeding areas critical for the maintenance of anadromous fish species within river reaches or areas in lakes or coastal tidal waters in which the fish spend extended periods of time Terrestrial areas utilized by large or dense aggregations of vertebrate animals (semi-aquatic foragers) for breeding National river reach designated as recreational	75 (1)
Habitat known to be used by State designated endangered or threatened species Habitat known to be used by a species under review as to its Federal endangered or threatened status Coastal Barrier (partially developed) Federally designated Scenic or Wild River	50
State land designated for wildlife or game management State designated Scenic or Wild River State designated Natural Area Particular areas, relatively small in size, important to maintenance of unique biotic communities	25
State designated areas for the protection of maintenance of aquatic life under the Clean Water Act	5 (1)
Wetlands see SI Table 14 (SW pathway) or SI Table 23 (Air pathway)	150

SI TABLE 14 (HRS TABLE 4-24): SURFACE WATER WETLANDS FRONTAGE VALUES

Total Length of Wetlands	Assigned Values
Less than 0.1 mile	0
0.1 to 1 mile	25
>1 to 2 miles	50
>2 to 3 miles	75
>3 to 4 miles	100
>4 to 8 miles	150 (1)
>8 to 12 miles	250
>12 to 16 miles	350

SURFACE WATER PATHWAY (concluded)
WASTE CHARACTERISTICS, THREAT, AND PATHWAY SCORE SUMMARY

WASTE CHARACTERISTICS — **Score**

14. If any Actual Contamination Targets (drinking water, human food chain, or environmental threat) exist for the watershed, assign the calculated hazardous waste quantity score or a score of 100, whichever is greater.	100
15. Assign the highest value from SI Table 7 (observed release) or SI Table 3 (no observed release) for the hazardous substance waste characterization factors below. Multiply each by the surface water hazardous waste quantity score and determine the waste characteristics score for each threat.	**WC Score (from Table)**

	Substance Value		HWQ		Product	
Drinking Water Threat Toxicity/Persistence	40	x	10	=	4000	6
Food Chain Threat Toxicity/Persistence/ Bioaccumulation	20,000	x	10	=	2,000,000	32
Environmental Threat Ecotoxicity/Persistence/ Ecobioaccumulation	200,000	x	10	=	20,000,000	56

Product	WC Score
0	0
>0 to <10	1
10 to <100	2
100 to <1,000	3
1,000 to <10,000	6
10,000 to <1E + 05	10
1E + 05 to <1E to 06	18
1E + 06 to <1E + 07	32
1E + 07 to <1E + 08	56
1E + 08 to <1E + 09	100
1E + 09 to <1E + 10	180
1E + 10 to <1E + 11	320
1E + 11 to <1E + 12	560
1E + 12 or greater	1000

Surface Water Pathway Threat Scores

Threat	Likelihood of Release (LR) Score	Targets (T) Score	Pathway Waste Characteristics (WC) Score (determined Above)	Threat Score $\frac{LR \times T \times WC}{82,500}$
Drinking Water	500	5	6	.182
Human Food Chain	500	20	32	3.88
Environmental	500	23	56	7.81
		SURFACE WATER PATHWAY SCORE (Drinking Water Threat + Human Food Chain Threat + Environmental Threat)		(maximum of 100) **11.87**

SOIL EXPOSURE PATHWAY

If there is no observed contamination (e.g., ground water plume with no surface source), do not evaluate the soil exposure pathway. Discuss evidence for no soil exposure pathway.

Soil Exposure Resident Population Targets Summary

For each property (duplicate page 35 as necessary)

IF there is an area of observed contamination on the property and within 200 feet of a residence, school, or day care center, enter on Table 15 each hazardous substance by sample ID. Record the detected concentration. Obtain cancer risk, and reference dose concentrations from SCDM. Sum the cancer risk and reference dose percentages for the substance listed. If cancer risk or reference dose concentrations are not available for a particular substance, enter N/A for the percentage. If the percentage sum calculated for cancer risk or reference dose equals or exceeds 100%, evaluate the residents and students as Level I. If both are less than 100% or all are N/A, evaluate the targets as Level II.

SI TABLE 15: SOIL EXPOSURE RESIDENT POPULATION TARGETS

Residence ID:

			Level I	Level II		Population		
Sample ID	Hazardous Substance	Conc. (mg/kg)	Cancer Risk Concentration	% of Cancer Risk Conc.	RFD	% of RFD	Toxicity Value	References
			Highest Percent		Sum of Percents		Sum of Percents	

Residence ID:

			Level I	Level II		Population		
Sample ID	Hazardous Substance	Conc. (mg/kg)	Cancer Risk Concentration	% of Cancer Risk Conc.	RFD	% of RFD	Toxicity Value	References
			Highest Percent		Sum of Percents		Sum of Percents	

Residence ID:

			Level I	Level II		Population		
Sample ID	Hazardous Substance	Conc. (mg/kg)	Cancer Risk Concentration	% of Cancer Risk Conc.	RFD	% of RFD	Toxicity Value	References
			Highest Percent		Sum of Percents		Sum of Percents	

SOIL EXPOSURE PATHWAY WORKSHEET
RESIDENT POPULATION THREAT

Likelihood of Exposure	Score	Data Type	Refs
1. OBSERVED RELEASE: If evidence indicates presence of observed contamination (depth of 2 feet or less), assign a score of 550; otherwise, assign 0. Note that a likelihood of exposure score of 0 results in a soil exposure pathway score of 0.			
LE =	0		

Targets

2. RESIDENT POPULATION: Determine the number of people occupying residences or attending school or day care on or within 200 feet of areas of observed contamination (HRS section 5.1.3). Level I: people x 10 = Level II: people x 1 = **Sum =**	0		
3. RESIDENT INDIVIDUAL: Assign a score of 50 if any Level I resident population exists. Assign a score of 45 if there are Level II targets but no Level I targets. If no resident population exist assign 0 (HRS Section 5.1.3)	0		
4. WORKERS: Assign a score from the table below for the total number of workers at the site and nearby facilities with areas of observed contamination associated with the site. Number or Workers — Score 0 — 0 1 to 100 — 5 101 to 1000 — 10 > 1000 — 15	5		
5. TERRESTRIAL SENSITIVE ENVIRONMENTS: Assign a value for each terrestrial sensitive environment (SI Table 16) in an area of observed contamination. Terrestrial Sensitive Environment Type — Value End./Threatened Species — 75	75		
6. RESOURCES: Assign a score of 5 if any one or more of the following resources is present on an area of observed contamination at the site; assign 0 if none applies. • Commercial agriculture • Commercial silviculture • Commercial livestock production or commercial livestock grazing	0		
Total of Targets T=	80		

SI TABLE 16 (HRS TABLE 5-5): SOIL EXPOSURE PATHWAY TERRESTRIAL SENSITIVE ENVIRONMENT VALUES

TERRESTRIAL SENSITIVE ENVIRONMENT	ASSIGNED VALUE
Terrestrial critical habitat for Federal designated endangered or threatened species National Park Designated Federal Wilderness Area National Monument (air pathway only)	100
Terrestrial habitat known to be used by Federal designated or proposed endangered or threatened species National Preserve (terrestrial) National or State terrestrial Wildlife Refuge Federal land designated for the protection of natural ecosystems Administratively proposed Federal Wilderness Area Terrestrial areas utilized by large or dense aggregations of vertebrate animals (semi-aquatic foragers) for breeding	75
Terrestrial habitat known to be used by State designated endangered or threatened species Terrestrial habitat known to be used by a species under review as to its Federal endangered or threatened status	50
State land designated for wildlife or game management State designated Natural Areas Particular areas, relatively small in size, important to maintenance of unique biotic communities	25

SOIL EXPOSURE PATHWAY WORKSHEET
NEARBY POPULATION THREAT

Likelihood of Exposure		Score	Data Type	Refs
7. Attractiveness/Accessibility (from SI Table 17 or HRS Table 5-6)	Value 10			
Area of Contamination (from SI Table 18 or HRS Table 5-7)	Value 20			
	Likelihood of Exposure(SI Table 19)			
	LE =	5		

Targets	Score	Data Type	Ref.
8. Assign a score of 0 if Level I or Level II resident individual has been evaluated or if no individuals live within 1/4 mile travel distance of an area of observed contamination. Assign a score of 1 if nearby population is within 1/4 mile travel distance and no Level I or Level II resident population has been evaluated.	1		
9. Determine the population within 1 mile travel distance that is not exposed to a hazardous substance from the site (i.e., properties that are not determined to be Level I or Level II); record the population for each distance category in SI Table 20 (HRS table 5-10). Sum the population values and multiply by 0.1	4.4		Ref. 10
Targets =	5.4		

SI TABLE 17 (HRS TABLE 5-6): ATTRACTIVENESS/ACCESSIBILITY VALUES

Area of Observed Contamination	Assigned Value
Designated recreational area	100
Regularly used for public recreation (for example, vacant lots in urban area)	75
Accessible and unique recreational area (for example, vacant lots in urban area)	75
Moderately accessible (may have some access improvements-for example gravel road) with some public recreation use	50
Slightly accessible (for example, extremely rural area with no road improvement) with some public recreation use	25
Accessible with no public recreation use	10
Surrounded by maintained fence or combination of maintained fence and natural barriers	5
Physically inaccessible to public, with no evidence of public recreation use	0

SI TABLE 18 (HRS TABLE 5-7): AREA OF CONTAMINATION FACTOR VALUES

Total area of the areas of observed contamination (square feet)	Assigned Value
≤ to 5,000	5
> 5,000 to 125,000	20
> 125,000 to 250,000	40
> 250,000 to 375,000	60
> 375,000 to 500,000	80
> 500,000	100

SI TABLE 19 (HRS TABLE 5-8): NEARBY POPULATION LIKELIHOOD OF EXPOSURE FACTOR VALUES

Area of Contamination Factor Value	Attractiveness/Accessibility Factor Value						
	100	75	50	25	10	5	0
100	500	500	375	250	125	50	0
80	500	375	250	125	50	25	0
60	375	250	125	50	25	5	0
40	250	125	50	25	5	5	0
20	125	50	25	5	5	5	0
5	50	25	5	5	5	5	0

SI TABLE 20 (HRS TABLE 5-10): DISTANCE-WEIGHTED POPULATION VALUES FOR NEARBY POPULATION THREAT

Travel Distance Category (miles)	Pop.	Number of people within the travel distance category												
			1 to 10	11 to 30	31 to 100	101 to 300	301 to 1000	1001 to 3000	3001 to 10,000	10,001 to 30,000	30,001 to 100,000	100,001 to 300,000	300,001 to 1,000,000	Pop. value
Greater than 0 to ¼	268	0	.1	.4	1.0	4	13	41	130	408	1,303	4,081	13,034	4
Greater than ¼ to ½	900	0	.05	.2	.7	2	7	20	65	204	652	2,041	6,517	7
Greater than ½ to 1	3,794	0	.02	.1	.3	1	3	10	33	102	326	1,020	3,258	33
										Reference (s) Topo Map			Sum =	44

SOIL EXPOSURE PATHWAY WORKSHEET (concluded)

WASTE CHARACTERISTICS

10. Assign the hazardous waste quantity score calculated for soil exposure	10
11. Assign the highest toxicity value from SI Table 16	100
12. Multiply the toxicity and hazardous waste quantity scores. Assign the Waste Characteristic score from the table below:	**WC = 6**

Product	WC Score
0	0
>0 to <10	1
10 to <100	2
100 to <1000	3
1000 to <10000	6
10000 to <1E+05	10
1E+05 to <1E+06	18
1E+06 to <1E+07	32
1E+07 to <1E+08	56
1E+08 or greater	100

RESIDENT POPULATION THREAT SCORE: 0

(Likelihood of Exposure, Question 1; Targets = Sum of questions 2,3,4,5,6)

$$\frac{LE \times T \times WC}{82,500}$$

NEARBY POPULATION THREAT SCORE: .0020

(Likelihood of Exposure, question 7; Targets = Sum of question 8,9)

$$\frac{LE \times T \times WC}{82,500}$$

SOIL EXPOSURE PATHWAY SCORE: .0020

Resident Population Threat + Nearby Population Threat

(Maximum of 100)

AIR PATHWAY

Air Pathway Observed Substances Summary Table

On SI Table 21, list the hazardous substances detected in air samples of a release from the site. Include only those substances with concentrations significantly greater than background levels. Obtain benchmark, cancer risk, and reference dose concentrations from SCDM. For NAAQS/NESHAPS benchmarks, determine the highest percentage of benchmark obtained for any substance. For cancer risk and reference dose, sum the percentages for the substances listed. If benchmark, cancer risk, or reference dose concentrations are not available for a particular substance, enter N/A for the percentage. If the highest benchmark percentage or the percentage sum calculated for cancer risk of reference dose equals or exceeds 100%, evaluate targets in the distance category from which the sample was taken and any closer distance categories as Level I. If the percentages are less than 100% or all are N/A, evaluate targets in that distance category and any closer distance categories that are not Level I as Level II.

AIR PATHWAY WORKSHEET

LIKELIHOOD OF RELEASE	Score	Data Type	Refs
1. OBSERVED RELEASE: If sampling data or direct observation support a release to air, assign a score of 550. Record observed release substances on SI Table 21.			
2. POTENTIAL TO RELEASE: If sampling data do not support a release to air, assign a score of 500. .Optionally, evaluate air migration gaseous and particulate potential to release (HRS Section 6.1.2).	500		No Data
LR =	500		

TARGETS

3. ACTUAL CONTAMINATION POPULATION: Determine the number of people within the target distance limit subject to exposure from a release of a hazardous substance to the air. a) Level I: _____ people x 10 = _____ b) Level II: _____ people x 10 = _____ **Total =**	0		
4. POTENTIAL TARGET POPULATION: Determine the number of people within the target distance limit not subject to exposure from a release of a hazardous substance to the air, and assign the total population score from SI Table 22. Sum the values and multiply the sum by 0.1.	35.4		Topo Pop.
5. NEAREST INDIVIDUAL: Assign a score of 50 if there are any Level I targets. Assign a score of 45 if there are Level II targets but no Level I targets. If no Actual Contamination Population exists, assign the Nearest Individual score from SI Table 22.	20		Table 22
6. ACTUAL CONTAMINATION SENSITIVE ENVIRONMENTS: Sum the sensitive environment values (SI Table 13) and wetland acreage values (SI Table 23) for environments subject to exposure from the release of a hazardous substance to the air.	0		
7. POTENTIAL CONTAMINATION SENSITIVE ENVIRONMENTS: Use SI Table 24 to evaluate sensitive environments not subject to exposure from a release	.0725		Ref. 10
8. RESOURCES: Assign a score of 5 if one or more air resources apply within ½ mile of a source; assign a 0 if none applies. • Commercial agriculture • Commercial silviculture • Major or designated recreation area	5		
T =	60.5		

Sensitive Environment Type	Value
Wetland Acreage	**Value**

SI TABLE 21: AIR PATHWAY OBSERVED RELEASE SUBSTANCES

Sample ID:__________ Level I_____ Level II_____ Distance from Sources (mi)___ References_____

Hazardous Substances	Conc. ($\mu g/m^3$)	Gaseous Particulate	Benchmark Conc. (NAAOS or NESHAPS)	% of Benchmark	Cancer Risk Conc.	% of Cancer Risk Conc.	RfD	% of RfD
	Highest Toxicity/ Mobility		Highest Percent		Sum of Percents		Sum of Percents	

Sample ID:__________ Level I_____ Level II_____ Distance from Sources (mi)___ References_____

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	Highest Toxicity/ Mobility		Highest Percent		Sum of Percents		Sum of Percents	

Sample ID:__________ Level I_____ Level II_____ Distance from Sources (mi)___ References_____

Hazardous Substances	Conc. ($\mu g/m^3$)	Gaseous Particulate	Benchmark Conc. (NAAOS or NESHAPS)	% of Benchmark	Cancer Risk Conc.	% of Cancer Risk Conc.	RfD	% of RfD
	Highest Toxicity/ Mobility		Highest Percent		Sum of Percents		Sum of Percents	

SI TABLE 22 (From HRS TABLE 6-17): VALUES FOR POTENTIAL CONTAMINATION AIR TARGET POPULATIONS

Distance From Site	Pop.	Nearest Individual (choose highest)	Number of People within the Distance Category												Pop. Value
			1 to 10	11 to 30	31 to 100	101 to 300	301 to 1,000	1,001 to 3,000	3,001 to 10,000	10,001 to 30,000	30,001 to 100,000	100,001 to 300,000	300,001 to 1,000,000	1,000,000 to 3,000,000	
On a Source	70	20	4	17	53	164	522	1,633	5,214	16,325	52,137	163,246	521,360	1,632,455	53
0 to ¼ mile	268	*	1	4	13	41	131	408	1,304	4,081	13,034	40,812	130,340	408,114	41
> ¼ to ½ mile	900	2	0.2	0.9	3	9	28	88	282	882	2,815	8,815	28,153	88,153	28
> ½ to 1 mile	3,794	1	0.06	0.3	0.9	3	8	26	83	261	834	2,612	8,342	26,119	83
> 1 to 2 miles	14,308	0	0.02	0.09	0.3	0.8	3	8	27	83	266	833	2,659	8,326	83
> 2 to 3 miles	19,886	0	0.009	0.04	0.1	0.4	1	4	12	38	120	375	1,199	3,755	38
> 3 to 4 miles	24,431	0	0.005	0.02	0.07	0.2	0.7	2	7	28	73	229	730	2,285	28
	Nearest Individual =	20												Sum =	354

References Topo Map

* Score = 20 if the Nearest Individual is within 1/8 mile of a source; score = 7 if the Nearest Individual is between 1/8 and ¼ mile of a source.

SI TABLE 23 (HRS TABLE 6-18): AIR PATHWAY VALUES FOR WETLAND AREA

Wetland Area	Assigned Value
< 1 acre	0
1 to 50 acres	25
> 50 to 100 acres	75
> 100 to 150 acres	125
> 150 to 200 acres	175
> 200 to 300 acres	250
> 300 to 400 acres	350
> 400 to 500 acres	450
> 500 acres	500

SI TABLE 24: DISTANCE WEIGHTS AND CALCULATIONS FOR AIR PATHWAY POTENTIAL CONTAMINATION SENSITIVE ENVIRONMENTS

Distance	Distance Weight	Sensitive Environment Type and Value (from SI Tables 13 and 23)	Product
On a Source	0.10	x	
		x	
0 to ¼ mile	0.025	x	
		x	
		x	
¼ to ½ mile	0.0054	x	
		x	
		x	
½ to 1 mile	0.0016	x	
		x	
		x	
1 to 2 miles	0.0005	X End./Threatened Species 75	.0375
		x	
		x	
2 to 3 miles	0.00023	x	
		x	
		x	
3 to 4 miles	0.00014	x Wetlands 250	.035
		x	
		x	
> 4 miles	0	x	
		x	
		Total Environments Score =	.0725

AIR PATHWAY (concluded)

WASTE CHARACTERISTICS

9. If any Actual Contamination Targets exist for the air pathway, assign the calculated hazardous waste quantity score of a score of 100, whichever is greater; if there are no Actual Contamination Targets for the air pathway, assign the calculated HWQ score for sources available to air migration.	10
10. Assign the highest air toxicity/mobility value from SI Table 21.	100
11. Multiply the air pathway toxicity/mobility and hazardous waste quantity scores. Assign the Waste Characteristics score from the table below:	**WC = 6**

Product	WC Score
0	0
>0 to <10	1
10 to <100	2
100 to <1,000	3
1,000 to <10,000	6
10,000 to <1E + 05	10
1E + 05 to <1E + 06	18
1E + 06 to <1E + 07	32
1E + 07 to <1E + 08	56
1E + 08 or greater	100

AIR PATHWAY SCORE: $\frac{LE \times T \times WC}{82,500}$ = 2.2

SITE SCORE CALCULATION	S	S^2
GROUND WATER PATHWAY SCORE (S_{GW})	.1236	.015
SURFACE WATER PATHWAY SCORE (S_{SW})	11.87	140.90
SOIL EXPOSURE (S_S)	.0020	.000004
AIR PATHWAY SCORE (S_A)	2.2	4.84
SITE SCORE $\sqrt{(S_{GW}^2 + S_{SW}^2 + S_S^2 + S_A^2/4)} = 145.76/4=36.44$		**6.04**

COMMENTS:

The former Andrew Knit (AK) site appears to have operated as a "cut and sew" factory making garments that were either dry cleaned or spot treated to ensure cleanliness before shipment. There is no evidence to indicate that contamination in groundwater or surface water is attributed to AK. No observed releases were detected in exposure pathways nor were any actual contaminated targets identified; therefore, the site is unlikely to pose a threat to human health or the environment. ADEM recommends that this site be placed in the category of "No Further Remedial Action Planned" (NFRAP) at the Federal level. No additional State action is planned in association with the AK site.

Constituents used in Table3 as potential release.